



Marketing Intelligence & Planning

Emerald Article: The impact of environmental education on children's knowledge and awareness of environmental concerns

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Article information:

To cite this document: Carolyn Strong, (1998), "The impact of environmental education on children's knowledge and awareness of environmental concerns", Marketing Intelligence & Planning, Vol. 16 Iss: 6 pp. 349 - 355

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<http://dx.doi.org/10.1108/02634509810237523>

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The impact of environmental education on children's knowledge and awareness of environmental concerns

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Asserts that the consumer power of children is growing in importance, as they represent a primary market that purchases its own products and services; an influential market that directs parental expenditures; and a future market. Aims to investigate and understand children's knowledge and awareness of environmental issues, and their selection and use of information about environmentally friendly products through primary school education. Firstly, an understanding of environmental education as a primary source of information was gained through a questionnaire survey mailed to school-teachers in the South-West of England. Secondly, questionnaires were distributed to equal numbers of boys and girls aged 7-11 years at three case schools in the South-West of England. The sample was asked open-ended questions about their knowledge of several fundamental environment concerns: the ozone layer; river pollution; recycling; and how they think the environment can be protected. The exploratory study confirms that levels of environmental understanding amongst children are high and provides a full breakdown of the results.

Background and introduction

Previous studies of environmentally responsive consumerism have addressed the implications of buyer behaviour (Charter, 1992; Ottman, 1989; Peattie, 1992) and changes in organisational management practices (Charter, 1992; Smith, 1993; Welford and Gouldson, 1993). The majority of such studies in the area of green consumerism focus on the greening of buyer behaviour of the individual adult, the development of green consumerism and the reactions of management in a wide sphere of industries.

Research by Charter (1992) revealed that environmental awareness is increasing in schools throughout Europe, with the introduction of environmental topics in a range of school syllabuses, together with wide recognition of the importance of environmental issues as a cross-curricular subject. This has resulted in environmental awareness and concern diffusing amongst children, who then use this information when making their own buyer decisions. Children represent three markets in one:

- 1 a primary market that purchases its own products and services;
- 2 an influential market that directs parental expenditures; and
- 3 a future market.

Therefore the consumer power of children is growing in importance in many market sectors.

Aims

The aims of this study are to investigate and understand children's knowledge and awareness of environmental issues; and their selection and use of information about environmentally friendly products. Environmental education in UK schools is the primary source of information, however, other sources such as peers, family and the media are acknowledged as relevant.

Conceptual development

The literature review for this paper falls into two distinct categories: the first examines

diffusion of environmentally responsive buying behaviour; the second examines the issues surrounding the development of children's attitudes and awareness of environmental concerns.

The diffusion of environmentally responsive consumer behaviour

Environmental issues such as global warming, deforestation, disposal of toxic waste, ozone depletion and reduction of resources (to name but a few), have become regular features of everyday life (McGrew, 1993). As McGrew (1993) indicates, the manifestation of environmentalism is characterised by a number of features which can be categorised as:

- public concern with environmental issues;
- the growth of green consumerism;
- the diffusion of ecological values; and
- the intensification of legislation and regulation of environmental concerns.

The growth of green consumerism and the diffusion of ecological values

The green consumer is one who avoids products that are likely to "endanger the health of the consumer or others; cause significant damage to the environment during manufacture, use or disposal; consume a disproportionate amount of energy; cause unnecessary waste; use materials derived from threatened species or environments; involve unnecessary use of, or cruelty to animals; adversely affect other countries" (Elkington, 1994).

The themes behind the rise of green consumerism and the diffusion of ecological values include: heightened awareness of green issues among the whole population, often as a result of media coverage; increased levels of information available to help green consumers make informed decisions; the existence of an increasing number of green substitutes to traditional products; widespread use of green themes in advertising; a shift in values towards concern for the environment and society; increased marketing and merchandising activity among environmental and social charities (Peattie, 1992).

The development of children's attitudes towards, awareness and knowledge of environmental issues

They [children] believe that, unless something is done now, damage to the environment will have a direct impact on their society within their own lifetimes. After all, a girl who is now ten can expect to live until 2062, and a boy until 2057. (The Henley Centre, 1994)

Research conducted by the Henley Centre in 1994 found children's levels of understanding of environmental issues to be relatively high, with some primary school children able to understand fairly complex issues such as the inter-relationship of the ozone layer, deforestation and CFCs. The Henley Centre research group found it particularly striking that there is realism and pragmatism, as opposed to blind idealism, about the contribution children feel they can make to protect the environment and an almost selfish reluctance to give up the lifestyles that they so clearly appreciate. For them, it is consumption itself and their behaviour in the marketplace which represent the most obvious, and easiest, way to avert environmental danger.

Today's generation of children have grown up during a period of considerable affluence, they enjoy lifestyles which are more comfortable than those of previous generations, and they endorse and expect the consumerist response to environmental problems (The Henley Centre, 1994).

The following data, covering children's attitudes to the environment, was collated from The Henley Centre (1994) report *Young Eyes* which evaluates the attitudes of children to the environment, based on a number of sources, including qualitative research undertaken by Young Directions, and quantitative research undertaken by Carrick James Market Research. In addition, they draw on data from the Henley Centre's Planning for Social Change surveys. The following sections summarise their findings:

How important are environmental concerns to primary school children?

The Henley Centre (1994) research indicated a high level of interest in the environment amongst young people. Overall, one third of the children interviewed in the qualitative research say that they are interested in the environment, and half that they are slightly interested. The early "brown rice and sandals" image of environmentalism does not seem to have influenced young people. Concern for the environment is not seen by them as particularly radical, controversial or political, in contrast with issues such as the Gulf War and the poll tax which they do see as

having political ramifications. For them, being concerned about the environment is simply a common-sense reaction to the present situation.

The environment is a key concern to young people. This is particularly true amongst younger children, who are less able to focus on more than one issue at a time. Data from the Youth Track Survey (1994) show that when asked in an unprompted question what their main concern was, 47 per cent of children stated an environmental issue was their main concern. A survey, conducted by Millward Brown in summer 1990 found that 33 per cent of children claimed to be very interested in environmental issues, and 50 per cent claimed to be slightly interested.

Children's environmental priorities

Research has shown that children's concern about the environment is focused on one of three areas:

- 1 Global concerns such as the ozone layer, the greenhouse effect and deforestation.
- 2 Concerns that are closer to home and that threaten to impinge on their own quality of life in a more immediate way, such as pollution of rivers and seas, litter, urban sprawl and car emissions.
- 3 Concerns about animals, primarily vivisection and endangered species.

Within these concerns there is a further important factor – how urgent the threat posed by the particular issue is. The environmental issues most important to children are global, potentially catastrophic, and likely to happen unless there is a positive move towards environmental responsibility. Moreover, it is felt that damage to the ozone layer, which emerged as the key concern for many, can be averted by the relatively easy step of using CFC-free products. The next category of issues for concerns are those problems which have a specific local impact (in the way that, for example, damage to the ozone layer does not), but which form part of a wider and more serious set of problems. However, for some children, concern about animals was more important, with vivisection generally more important than endangered species. Issues with a relatively local impact, such as dropping litter are perceived to be serious but not life threatening.

Levels and sources of environmental knowledge amongst children

Children show a surprisingly high level of overall understanding of environmental issues. For example, some are able to talk about the interaction between CFCs, the ozone layer, deforestation and global warming. In general younger children are more

likely to claim that they know something about the simpler issues such as the ozone layer, animal experiments and pollution than more complex issues, as Figure 1 illustrates.

Children can and do use various sources of information in making consumer decisions to buy, or as often happens, to ask their parents to buy for them. Television, parents, siblings, friends, in-store displays, and catalogues are the kind of information sources available to children (Ward *et al.*, 1977). Recent research by Carrick-James Market Research (Cramp, 1995), shows that 86 per cent of children aged 13-15 watch television seven days a week, with an average daily viewing of 3.56 hours. A total of 72 per cent have a television in their own room – this frequent exposure to television, and thus commercials, makes television advertising a primary source of information. Other sources of information include the press, magazines, peer groups and siblings.

However, the most important source of information about the environment for children is school lessons and projects. In both of these information is fixed in children's minds, either because they have to learn it for a test or because they have been actively involved in, for example, burying rubbish and digging it up some time later to see how much has biodegraded. The environment tends to crop up as an issue in a number of different subjects, including chemistry, biology and geography.

Environmental education in the UK

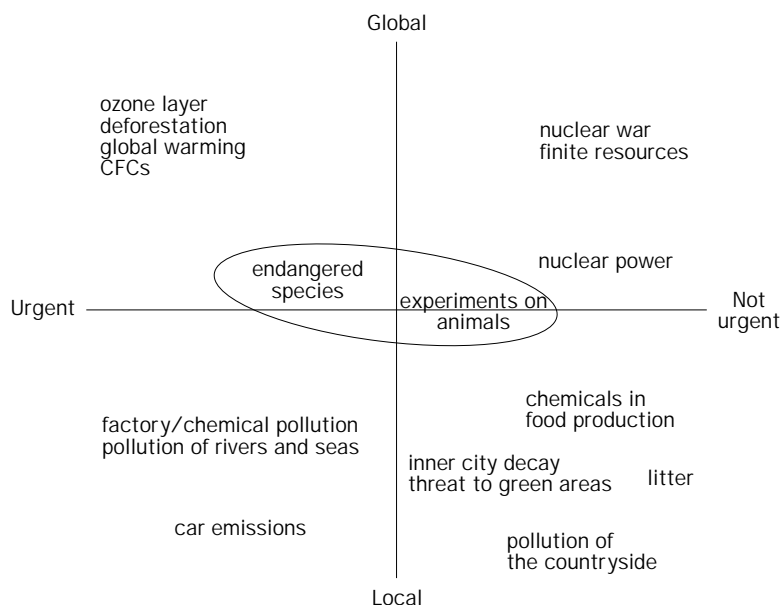
The international endorsement of environmental education has helped to shape the aims, objectives and planning of the environmental education curriculum within schools and local authorities in the United Kingdom (Palmer and Neal, 1994). Environmental education is well established on the school curriculum. Individual schools and teachers have done a tremendous amount to promote its importance and to develop effective teaching and learning strategies (Palmer and Neal, 1994). The May 1988 Resolution of the Council of Ministers of the European Community played a significant role in the inclusion of environmental education as an officially recognised cross-curriculum theme of the National Curriculum for schools (Palmer and Neal, 1994). The then Minister of State for Education and Science, Angela Rumbold, reinforced this in a speech on 27 July 1989, as cited by Palmer and Neal (1994):

Good environmental education, like any good education, must lead pupils and students out and on from their immediate perceptions and experience to a wider understanding. It must develop their capacity to go beyond the anecdotal and the particular, none of that happens by chance. A number of subjects and aspects of the school curriculum deal with matters to do with the interplay between man and his environment ... I am convinced that pupils must first learn about natural phenomena in order to understand complex environmental matters ... The importance of environmental education is that it sensitises us to the causes and effects of problems of which, for too long, we have been only dimly aware. The environment is about children's future and many already know that we must encourage them to think positively about it ... what needs to be done to reduce the damage we do to it, what opportunities there are for improving the quality of our surroundings – and to come up with practical solutions. They should draw on what they learn at school.

The National Curriculum and environmental education

Environmental education is an officially recognised and documented cross-curricular theme of the National Curriculum for schools. It is one of the first five themes documented, alongside health education, education for citizenship, careers education and guidance, and economic and industrial understanding (Palmer and Neal, 1994). Themes are regarded not as an appendage to be "tacked on" to the core and foundation subjects, but as a central element of the curriculum as a whole, having progression and continuity like all subject areas. By

Figure 1
 Children's level of understanding of environmental issues



Source: Henley Centre Report (1994)

definition, they are cross-curricular, and thus can feature in or arise out of a number of other areas of the curriculum (Palmer and Neal, 1994). The objectives of the themes within the National Curriculum are:

- to promote thinking and discussion on questions of values and belief;
- to add to knowledge and understanding; and
- they rely on practical, experiential learning and decision making.

Documentation for the cross-curricular theme of environmental education is contained in a HMSO document produced by the NCC (1990), which sets out the objectives of environmental education as follows:

- Education *about* the environment – basic knowledge and understanding of the environment.
- Education *for* the environment – concerned with the values, attitudes and positive action for the environment.
- Education *in* or *through* the environment – using the environment as a resource with emphasis on enquiry and investigation and pupil's first-hand experience.

Schools have the freedom to interpret the guidelines for the various themes and to decide how best to incorporate them into the curriculum as a whole.

The National Curriculum recommends no single approach to the organisation of the curriculum or teaching methodology for environmental education. The NCC (1990) stipulations for the implementation of the environmental education curriculum for primary schools is summarised as follows:

In primary schools they can be adapted either to the theme or topic approach, a common method of organising the curriculum, or to more subject teaching ... they will often be identified as threads running through topics and through subjects. (NCC, 1990)

Research methodology

The methodological framework

The aim of this exploratory study is to determine children's knowledge and awareness of environmental concerns gained through primary school education. The essence of this research is understanding and investigation, rather than measurement; an underlying objective is to understand environmental education and its implications for children's environmental knowledge and awareness.

The methodological techniques

Firstly, an understanding of environmental education as a primary source of information

was gained through a questionnaire survey mailed to 800 schools in the South-West of England, 227 responses were received, a response rate of 28 per cent.

Secondly, self-complete questionnaires were distributed to an equal number of boys and girls aged 7-11 years at three case schools in the South-West of England. Questionnaires were constructed with the age and ability of the respondents in mind – simple constructs were developed in an easy-to-read and complete format. The questionnaires were distributed with instructions by the classroom teacher who gave directions that no collaboration was to take place when answering the questions.

Discussion of the findings

Before considering the findings of this exploratory research, the limitations of the study must be acknowledged:

- Schools volunteering to allow the children to participate displayed a tendency to be environmentally aware and actively involved in environmental education programmes. A prerequisite for allowing the questionnaires to be distributed in the classroom was the personal environmental concern of the school teacher and their individual promotion of the importance of environmental education.
- A number of factors are implicit in research with children: children have a tendency to "please" adults and a need to "show off" in front of their peers; this problem was overcome as far as possible with the instructions given before questionnaire completion.

Environmental education

Environmental education is widely implemented in primary schools, 53 per cent of the sample schools actively encouraged environmental education as an ongoing classroom topic and an outside-the-classroom activity. Implementation of the curriculum requirements has a focus on teaching outside the classroom, 93 per cent of the schools surveyed teach the subject outside the school – at river sites, local council recycling plants, in fields etc. Teachers surveyed confirmed the belief that children develop a sound knowledge of issues in which they are "involved" and environmental issues are such that outdoor activities are practical and accomplish the desired results effectively.

In terms of the approach to teaching, 55 per cent of those surveyed teach it as a topic approach and 88 per cent teach it through other subjects (some schools combine the two

methods) – the scope of involvement of environmental issues in schools is perceived to be wide and varied, with the environment impinging on many day-to-day teaching aspects and therefore reinforcing the knowledge gained.

The teachers interviewed indicated that it is the prerogative of the individual school teacher to implement environmental education, and to a large degree the personal attitudes of the teacher towards the issues of environmental responsibilities influence the scope of environmental education actually implemented. For example, one of the classrooms visited contained a host of environmental projects – from art work to a nature table, energy and water preservation murals and recycling bins; another in the same school contained no indications of environmental education and the school teacher indicated that of course environmental education is taught, “it is my job to cover the curriculum and I did it before Christmas”.

Children's knowledge and awareness of environmental issues

A high level of knowledge and understanding of environmental issues was found amongst the children surveyed. The sample was asked direct open-ended questions about their knowledge of several fundamental environmental concerns: the ozone layer, river pollution, recycling and how they think the environment can be protected.

Children's concern for the environment

Children aged 7-11 years are concerned for the environment, this concern was found to centre on several elements of environmental responsibility, as illustrated in Figure 2.

The children surveyed demonstrated a “focused” concern for the environment, paying particular attention to wildlife, plants and trees. It is assumed this focus is developed from the nature of school lessons and environmental teaching outside the

Figure 2

A matrix of children's concern for the environment

Focused	Concern for Wildlife	Concern for plants and trees
	Concern for the future of nature and seas e.g. oil spillage	Concern about pollution
Broad Scope	Out of children's immediate control	Actions which can be controlled by children themselves

classroom. Alternatively some concern for broad scope issues was found to exist, with general concern for “the future” in terms of nature, the ozone layer, rivers, the sea and pollution generally. These concerns can be further categorised by the actions children can take to act on these concerns – they as individuals could see their role in conservation of plants and trees and the reduction of pollution through the purchase of CFC-free products, recycling, etc. Some concerns were perceived to be out of the control of the children surveyed – for example the extinction of wildlife and the risk of an oil spillage.

The ozone layer

All the children surveyed could correctly define what the ozone layer is, as Figure 3 illustrates. The term “protective layer” around the earth was used as a definition by 42 per cent of the sample, with 32 per cent using the more general definition of the “thing” that protects us from the sun, and 26 per cent defining it as a “barrier” around the earth.

River pollution

Again, this was defined by all respondents to some degree, as depicted in Figure 4. A focus on waste disposal in rivers formed the definitions provided by the sample, with 40 per cent referring to severe pollution as people dumping chemical, oil, sewage and waste into the river; 39 per cent referring to “people” putting waste in the river, and 21 per cent defining the issue as “factories” putting waste in the river.

Figure 3

Children's definition of the ozone layer

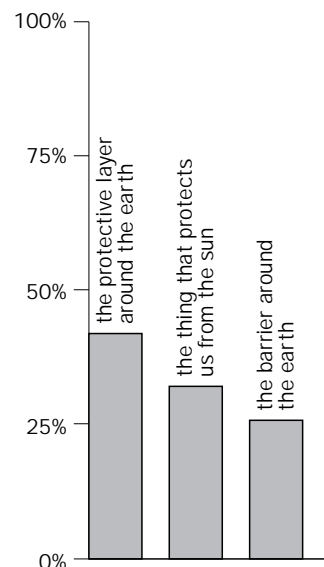
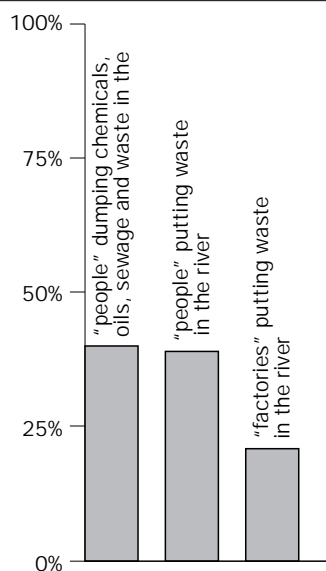


Figure 4
 Children's definition of river pollution



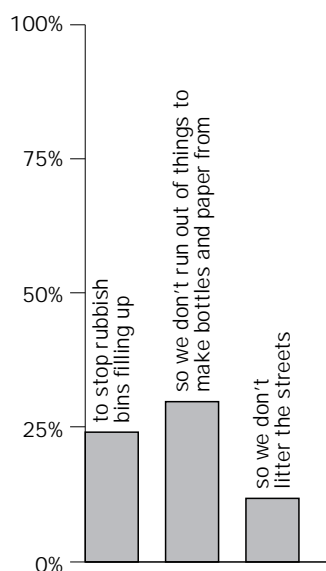
Recycling

Nearly all of the children correctly defined recycling (89 per cent), the definitions given are illustrated in Figure 5. Definitions of their understanding were simplest, but so are definitions provided by primary school children generally.

How children think we can protect the environment

For most children a concern for the environment is merely a common-sense part of their lives. When asked how they think the environment could be protected the responses received fell into distinct categories – those

Figure 5
 Children's definition of recycling



which are local or global and common-sense actions of citizenship, those which are local or global and involve actions of consumer decision making. Figure 6 illustrates these categories as they fall onto a positioning framework. The actions which are situated in the top left hand segment focus on day-to-day common-sense actions of citizenship which influence the local environment, and include not dropping litter in the streets and not cutting down or damaging trees. The actions in the top right hand segment involve conscious consumer decision-making actions which affect the local environment – such as not using CFC products, purchasing recycled paper products and recycling glass, paper and cans. Also included in this segment are factors surrounding the unnecessary use of cars. The only distinct global action mentioned by the sample was the issue of “not littering seas and rivers” – this was perceived to be littering by people and industrial organisations.

The diagram overleaf demonstrates good knowledge of environmental issues amongst the sample, however, when asked if they dropped litter, 64 per cent of the respondents admitted that they sometimes did – with justifying comments including “not very often” and “but only sometimes”. This illustrates the volatile nature of primary school children and must be considered when researching and marketing to children.

Conclusions and implications

Environmental education

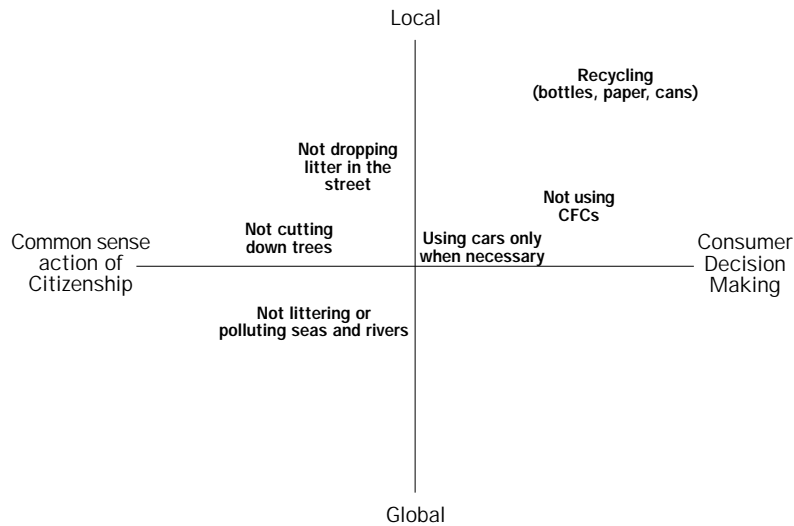
Environmental education is firmly established in UK schools, this study confirms the widespread implementation of environmental education in schools and its impact on children's knowledge and awareness of environmental issues and concerns. Schools have the freedom to interpret the curriculum and develop individual teaching methodologies, and with the subject easily taken outside the classroom to the local area, it is possible to facilitate learning through participation and thereby help to fix information in children's minds through active involvement, gaining education through the environment by using it as a resource, with emphasis on enquiry and investigation and pupil's first hand experience. It can be concluded that children do gain a basic knowledge and understanding of the environment in the primary school, developing concerns for environmental protection and positive attitudes towards environmental responsibility.

Children's knowledge and awareness of environmental issues

Taking these two points into consideration, this exploratory study confirms that levels of environmental understanding amongst children are high, with a simple common-sense reaction to issues of everyday life.

Figure 6

A framework of how children think we can protect the environment



The environmental issues most important to children are local and preventable with little effort – damage to the ozone layer, which emerged as the key concern for many, can be averted by the relatively easy step of using CFC-free products.

It can be concluded that environmental education does promote thinking and discussion on questions of values and belief; does add to knowledge and understanding; and is successful in relying on practical and experimental learning.

Implications

The implications of this research centre on children as consumers in three contexts, with further research required to determine the following.

Children as individual environmental purchasers – research reported by Cramp (1995) revealed that on average children receive a weekly income of between £9.21 (13-14 year olds) and £29.94 (15-17 year olds) accumulated

from pocket money, part-time employment, gifts and financial rewards from family members.

Children's influence on family purchase of products marketed as environmental responsive – children are a major source of information in the family purchasing context and “pester” power is notably increasing with the development of power marketing communications targeted directly at children as influencers in the family group.

The impact of today's environmental education on children as consumers of the future – what positive action for the environment will this consumer group take in 10 to 15 years time?

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